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IS 3886 (1966): Minimum Requirements for General Purpose
Audio Frequency Signal Generators (30 c/s to 30 kc/s) [LITD
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“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

MINIMUM REQUIREMENTS FOR
GENERAL PURPOSE AUDIO
FREQUENCY SIGNAL GENERATORS
(30 c/s to 30 kc/s)

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

MINIMUM REQUIREMENTS FOR GENERAL PURPOSE AUDIO FREQUENCY SIGNAL GENERATORS (30 c/s to 30 kc/s)

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Indian Standard

MINIMUM REQUIREMENTS FOR GENERAL PURPOSE AUDIO FREQUENCY SIGNAL GENERATORS (30 c/s to 30 kc/s)

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 19 December 1966, after the draft finalized by the Electronic Equipment Sectional Committee had been approved by the Electro-technical Division Council.

0.2 The object of this standard is to specify certain minimum levels of performance expected of general purpose audio frequency signal generators operating in the frequency range of 30 c/s to 30 kc/s intended for servicing of broadcast radio receivers, public address amplifiers, etc.

0.2.1 This standard also covers characteristics to be included in the manufacturer's specification for individual instruments and it is anticipated that this standard would ensure a uniform presentation of these characteristics by manufacturers.

0.2.2 With regard to safety requirements, the signal generator should satisfy the requirements of IS : 616-1957* in so far as it is applicable to this standard.

0.2.3 The signal generators covered by this standard are essentially low power audio frequency voltage generators.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Code of safety requirements for mains-operated radio receivers.

†Rules for rounding off numerical values (revised).

1. SCOPE

1.1 This standard lays down the minimum performance requirements for general purpose audio frequency signal generators operating in the frequency range of 30 c/s to 30 kc/s.

1.1.1 Both ac mains-operated and battery-operated signal generators are covered in this standard.

1.2 This standard does not cover the climatic, mechanical and physical requirements for audio frequency signal generators.

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions included in IS : 3915-1966* shall apply.

3. METHODS OF MEASUREMENTS

3.1 The performance requirements specified in this standard are to be measured in accordance with IS : 3915-1966*.

4. OUTPUT SIGNAL FREQUENCY

4.1 Frequency Range— Frequency range shall generally be 30 c/s to 30 kc/s.

4.1.1 The boundary frequencies of each band shall be so adjusted that the upper end of a lower band overlaps with the lower end of the next higher band. The minimum overlap in the boundary frequencies of adjacent bands should be at least 4.0 percent of the highest frequency of lower band to ensure continuous coverage.

4.2 Frequency of Internal Calibrator— The frequency of an internal calibrator, if incorporated, shall correspond to the reference audio frequency of 1000 c/s.

4.3 Frequency Calibration Error— The basic calibration error at any setting of the frequency shall not exceed 2.0 percent of the scale reading or 3 c/s whichever is greater.

4.4 Frequency Drift— The frequency drift measured over a period of 1 hour (drift due to long-term operation) shall not exceed 1.0 percent or 1 c/s whichever is greater.

4.5 Frequency Change Due to Load— The maximum frequency change due to change of load from rated load to half rated load and from rated

*Methods of measurements on audio frequency signal generators (30 c/s to 30 kc/s).

load to open circuit shall not be more than 0.5 percent or 1 c/s whichever is greater.

5. OUTPUT VOLTAGE

5.1 Output Voltage Range — The output voltage range shall be at least 1 mV to 10 V, continuously variable.

NOTE—This range is applicable when terminated with a load of 600 ohms (see also 6.1).

5.2 Output Voltage Variation with Frequency — The output voltage shall not vary by more than ± 1 dB over the specified frequency range with respect to the output voltage at 1 000 c/s.

5.3 Calibrated Voltage — The minimum calibrated voltage available shall be at least 10 mV.

5.4 Voltage Marking — The output voltage markings shall be in millivolts or in volts. Additional marking in dB may also be provided.

NOTE — In case of dB marking, the reference voltage should correspond to 1 MW through 600 ohms.

5.5 Basic Error of Output Voltage — The basic error of the output voltage level at any setting in all the bands shall be less than 10 percent.

5.6 Hum, Noise and Distortion — The total hum, noise and distortion at an output level of 10 V shall not exceed 2.0 percent.

6. SOURCE IMPEDANCE

6.1 The source impedance of the signal generator shall be 600 ± 100 ohms.

6.1.1 Additional lower impedance (such as 3 ohms) and higher impedance (such as 5 000 ohms) may be provided as optional facilities.

7. INFLUENCE OF EXTERNAL OPERATING CONDITIONS

7.1 Influence of Temperature

7.1.1 On Frequency — The maximum change in the value of frequency over an ambient temperature range of 10° to 50°C shall not exceed 30 percent of the permitted tolerance for frequency calibration error (see 4.3).

7.1.2 On Output Voltage — The maximum change in the value of output voltage over an ambient temperature range of 10° to 50°C shall

not exceed 30 percent of the permitted tolerance for basic error of the output voltage (*see* 5.5).

7.2 Influence of Mains Voltage

7.2.1 On Frequency—The maximum change in the value of frequency for a mains voltage variation of ± 10 percent shall not exceed 30 percent of the permitted tolerance for frequency calibration error (*see* 4.3).

7.2.2 On Output Voltage—The maximum change in the value of output voltage for a mains voltage variation of ± 10 percent shall not exceed 30 percent of the permitted tolerance for basic error of the output voltage (*see* 5.5).

7.3 Influence of ac Supply Frequency

7.3.1 On Frequency—The maximum change in the value of frequency for ac supply frequency variation of ± 3 percent from the rated frequency shall not exceed 30 percent of the permitted tolerance for frequency calibration error (*see* 4.3).

7.3.2 On Output Voltage—The maximum change in the value of output voltage for ac supply frequency variation of ± 3 percent from the rated frequency shall not exceed 30 percent of the tolerance for basic error of the output voltage (*see* 5.5).

7.4 Influence of Battery Voltage — Under consideration.

8. MARKING

8.1 Unless otherwise specified, the following information shall be marked on the signal generator indelibly and externally visible:

- a) Serial number, and model designation;
- b) Name and trade mark of the manufacturer; and
- c) Country of manufacture.

8.2 The following information shall be clearly specified in the manual or in the printed label of adequate size affixed to one of the inner faces of the cabinet or back cover:

- a) Type of supply and the operating voltage,
- b) Maximum power consumption in the case of mains-operated signal generators or maximum current range in the case of battery-operated signal generators,
- c) Plan of the chassis showing the location of the components, and
- d) Any other information or caution which the manufacturer may consider necessary.

8.3 The audio frequency signal generator may also be marked with ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act, and the Rules and Regulations made thereunder. Presence of this mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard, under a well-defined system of inspection, testing and quality control during production. This system, which is devised and supervised by ISI and operated by the producer, has the further safeguard that the products as actually marketed are continuously checked by ISI for conformity to the standard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

9. TECHNICAL MANUAL

9.1 Each signal generator shall be provided with a copy of the technical manual which shall contain the following information:

- a) Power supply requirements;
- b) Warm-up period to attain overall stability;
- c) Source impedance;
- d) The type of output, namely, balanced or unbalanced; and
- e) Any other information or caution which the manufacturer may consider necessary.

9.1.1 It shall also contain a complete list of parts, spares, and accessories supplied or recommended for use along with a circuit diagram and operating, servicing and maintenance instructions.

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INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Basic Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s ²
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m ²

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